



6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R04-OAR-2018-0142; FRL-9976-96-Region 4]

Air Plan Approval; Kentucky; 2008 Ozone NAAQS Interstate Transport SIP Requirements

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve Kentucky's February 28, 2018, draft State Implementation Plan (SIP) submission pertaining to the "good neighbor" provision of the Clean Air Act (CAA or Act) for the 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS) that was submitted by Kentucky for parallel processing. The good neighbor provision requires each state's SIP to address the interstate transport of air pollution in amounts that contribute significantly to nonattainment, or interfere with maintenance, of a NAAQS in any other state. In this action, EPA is proposing to approve Kentucky's draft submission demonstrating that no additional emission reductions are necessary to address the good neighbor provision for the 2008 ozone NAAQS beyond those required by the Cross-State Air Pollution Rule Update (CSAPR Update) federal implementation plan (FIP). Accordingly, EPA is proposing to approve Kentucky's draft submission as partially addressing the requirements of the good neighbor provision for the 2008 ozone NAAQS, and resolving any obligation remaining under the good neighbor provision after promulgation of the CSAPR Update FIP. EPA is proposing this action because it is consistent with the CAA.

DATES: Comments must be received on or before **[insert date 30 days after date of publication in the Federal Register]**.

ADDRESSES: Submit your comments, identified by Docket ID No. at EPA-R04-OAR-2018-0142 <http://www.regulations.gov>. Follow the online instructions for submitting comments.

Once submitted, comments cannot be edited or removed from Regulations.gov. EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting-epa-dockets>.

FOR FURTHER INFORMATION CONTACT: Ashten Bailey, Air Regulatory Management Section, Air Planning and Implementation Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW, Atlanta, Georgia 30303-8960. Ms. Bailey can be reached by telephone at (404) 562-9164 or via electronic mail at bailey.ashten@epa.gov.

SUPPLEMENTARY INFORMATION:

I. Background

On March 27, 2008 (73 FR 16436), EPA promulgated an ozone NAAQS that revised the levels of the primary and secondary 8-hour ozone standards from 0.08 parts per million (ppm) to

0.075 ppm. Pursuant to CAA section 110(a)(1), within three years after promulgation of a new or revised NAAQS (or shorter, if EPA prescribes), states must submit SIPs that meet the applicable requirements of section 110(a)(2). EPA has historically referred to these SIP submissions made for the purpose of satisfying the requirements of sections 110(a)(1) and 110(a)(2) as “infrastructure SIP” submissions. One of the structural requirements of section 110(a)(2) is section 110(a)(2)(D)(i), also known as the “good neighbor” provision, which generally requires SIPs to contain adequate provisions to prohibit in-state emissions activities from having certain adverse air quality effects on neighboring states due to interstate transport of air pollution. There are four sub-elements, or “prongs,” within section 110(a)(2)(D)(i) of the CAA. CAA section 110(a)(2)(D)(i)(I) requires SIPs to include provisions prohibiting any source or other type of emissions activity in one state from emitting any air pollutant in amounts that will contribute significantly to nonattainment, or interfere with maintenance, of the NAAQS in another state. The two provisions of this section are referred to as prong 1 (significant contribution to nonattainment) and prong 2 (interference with maintenance). Section 110(a)(2)(D)(i)(II) requires SIPs to contain adequate provisions to prohibit emissions that will interfere with measures required to be included in the applicable implementation plan for any other state under part C to prevent significant deterioration of air quality (prong 3) or to protect visibility (prong 4). This proposed action addresses only prongs 1 and 2 of section 110(a)(2)(D)(i).¹

On July 17, 2012, Kentucky submitted a SIP submission to EPA, addressing a number of the CAA requirements for the 2008 8-hour ozone NAAQS infrastructure SIPs. With respect to the interstate transport requirements of 110(a)(2)(D)(i)(I), EPA disapproved the submission,

¹ All other infrastructure SIP elements for Kentucky for the 2008 8-hour ozone NAAQS were addressed in separate rulemakings. *See* 78 FR 14681 (March 7, 2013) and 79 FR 65143 (November 3, 2014).

effective April 8, 2013 (78 FR 14681). In the notice, EPA explained that the disapproval of the good neighbor portion of the Commonwealth's infrastructure SIP submission did not trigger a mandatory duty for EPA to promulgate a FIP to address these requirements. *Id.* at 14683. Citing the D.C. Circuit's decision *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7, 41 (D.C. Cir. 2012) (*EME Homer City I*), EPA explained that the court concluded states have no obligation to make a SIP submission to address the good neighbor provision for a new or revised NAAQS until EPA first defines a state's obligations pursuant to that section. Therefore, because a good neighbor SIP addressing the 2008 ozone standard was not at that time required, EPA indicated that its disapproval action would not trigger an obligation for EPA to promulgate a FIP to address the interstate transport requirements. On April 29, 2014, the Supreme Court issued a decision reversing and vacating the D.C. Circuit's decision in *EME Homer City I*. *EPA v. EME Homer City Generation, L.P.*, 133 S. Ct. 2857 (2013). EPA subsequently finalized a determination that the FIP obligation was triggered on the date of the judgment issued in *EPA v. EME Homer City Generation*, or on June 2, 2014. *See* 81 FR 74504, 74513 (October 26, 2016).²

In October 2016, EPA promulgated the CSAPR Update to address the requirements of CAA section 110(a)(2)(D)(i)(I) concerning interstate transport of air pollution for the 2008 ozone NAAQS. *See* 81 FR 74504 (October 26, 2016). In the CSAPR Update rulemaking, EPA

² On April 30, 2013, Sierra Club filed a petition for review of EPA's final action disapproving Kentucky's good neighbor SIP in the Sixth Circuit based on the Agency's conclusion that the FIP obligation was not triggered by the disapproval of Kentucky's good neighbor SIP. *Sierra Club v. EPA*, Case No. 13-3546 (6th Cir., filed Apr. 30, 2013). Following the Supreme Court decision, EPA requested, and the Sixth Circuit granted, vacatur and remand of the portion of EPA's final action on Kentucky's good neighbor SIP that determined that the FIP obligation was not triggered by the disapproval. *See Order, Sierra Club v. EPA*, Case No. 13-3546 (Mar. 13, 2015), ECF No. 74-1. On October 24, 2016 (81 FR 74513), EPA issued a final action correcting the portion of the Kentucky disapproval notice indicating that the FIP obligation would not be triggered by the SIP disapproval, but rather on the date of the Supreme Court's judgment. EPA explained that the FIP obligation was not triggered as of the date of the SIP disapproval because the controlling law as of that date was the D.C. Circuit decision in *EME Homer City I*, which held that states had no obligation to submit a SIP and EPA had no authority to issue a FIP until EPA first quantified each state's emission reduction obligation under the good neighbor provision. Rather, EPA concluded that the FIP obligation was triggered when the Supreme Court clarified the state and federal obligations with respect to the good neighbor provision.

determined that air pollution transported from Kentucky would unlawfully affect other states' ability to attain or maintain the 2008 8-hour ozone NAAQS and established an ozone season nitrogen oxide (NO_x) budget for Kentucky's electricity generating units (EGUs).³ In particular, EPA found that Kentucky was linked to four maintenance-only receptors in Harford County, Maryland; Richmond County, New York; Hamilton County, Ohio; and Philadelphia County, Pennsylvania. Kentucky EGUs meeting the CSAPR applicability criteria are consequently subject to CSAPR FIPs that require participation in the CSAPR NO_x Annual Trading Program, the CSAPR sulfur dioxide (SO₂) Group 1 Trading Program, and the CSAPR NO_x Ozone Season Group 2 Trading Program.⁴

In the CSAPR Update, EPA found that the CSAPR FIP for Kentucky and 20 other states may provide only a partial remedy with respect to the good neighbor provision requirements as to the 2008 8-hour ozone NAAQS. EPA's analysis showed persisting downwind air quality problems after implementation of the CSAPR Update in 2017, including two of the receptors to which Kentucky was linked in Harford County, Maryland, and Richmond County, New York. Because EPA's analysis showed persisting downwind air quality problems and did not assess available emissions reductions after 2017, EPA could not definitively conclude, without further analysis, that the CSAPR Update fully addressed the requirements of the good neighbor provision in upwind states, including Kentucky. *See* 81 FR at 74521.

On October 27, 2017, EPA issued a memorandum⁵ with technical information and related analyses to assist states with developing SIPs to address the remaining section 110(a)(2)(D)(i)(I)

³ CSAPR Update, 81 FR at 74507-08.

⁴ 40 CFR 52.38(a)(2)(i), (b)(2), (b)(2)(iii); 52.39(b); 52.940(a), (b); 52.941(a).

⁵ Memorandum, Stephen D. Page, Supplemental Information on the Interstate Transport State Implementation Plan Submissions for the 2008 Ozone National Ambient Air Quality Standards under Clean Air Action Section 110(a)(2)(D)(i)(I) (October 2017 Transport Memo).

requirements for the 2008 8-hour ozone NAAQS. In the technical analysis related to the October 2017 Transport Memo, EPA used detailed air quality analyses to identify locations in the U.S. where EPA anticipates there will be nonattainment or maintenance problems for the 2008 8-hour ozone NAAQS in the year 2023 (these are identified as nonattainment or maintenance receptors, respectively). This analysis used the Comprehensive Air Quality Model with Extensions (CAMx version 6.40)⁶ to model the 2011 base year, and 2023 future base case emissions scenarios to identify projected nonattainment and maintenance sites with respect to the 2008 8-hour ozone NAAQS.⁷ The updated modeling data released with the October 2017 Transport Memo is the most up-to-date information EPA has developed to inform the Agency's analysis of downwind air quality problems for the 2008 8-hour ozone NAAQS.⁸ EPA's updated modeling for the 2023 future base case emissions scenarios indicates that there are no monitoring sites, outside of California, that are projected to have nonattainment or maintenance problems with respect to the 2008 ozone NAAQS in 2023.

II. Kentucky's Draft SIP Submission

On February 28, 2018, Kentucky provided a draft SIP submission to address the remaining interstate transport obligations for the 2008 8-hour ozone NAAQS, which contains a

⁶ CAMx v6.40 was the most recent public release version of CAMx at the time EPA updated its modeling in fall 2017. "Comprehensive Air Quality Model with Extensions version 6.40 User's Guide" Ramboll Environ, December 2016. <http://www.camx.com/>.

⁷ For the updated modeling, EPA used the construct of the modeling platform (*i.e.*, modeling domain and non-emissions inputs) that we used for the Notice of Data Availability (NODA) modeling, except that the photolysis rates files were updated to be consistent with CAMx v6.40. The NODA Air Quality Modeling Technical Support Document describing the modeling platform is available at <https://www.epa.gov/airmarkets/notice-data-availability-preliminary-interstate-ozone-transport-modeling-data-2015-ozone>.

⁸ October 2017 Transport Memo.

demonstration⁹ that the emission reductions required by the CSAPR Update are adequate to prohibit emissions within Kentucky from significantly contributing to nonattainment, or interfering with the maintenance, of downwind states with respect to the 2008 ozone NAAQS. This demonstration shows that, based on the Commonwealth's current and projected emissions, air quality modeling data, and on-the-books state and federal measures reducing ozone precursor emissions, including the CSAPR Update FIP, emissions from Kentucky will not significantly contribute to nonattainment, or interfere with the maintenance, of downwind states with respect to the 2008 ozone NAAQS in 2023.

In its February 28, 2018, draft submission, Kentucky reviewed air quality modeling and data files that EPA disseminated in the October 2017 Transport Memo, which indicated that the air quality problems at monitors to which Kentucky was linked in the CSAPR Update would be resolved in 2023. Kentucky's draft SIP submission agrees with the October 2017 Transport Memo's preliminary projections, and provides information intended to demonstrate that use of the modeling is appropriate. In addition, the draft submission contains air quality modeling conducted by Alpine Geophysics, LLC, that concludes that none of the nonattainment and maintenance receptors identified in the CSAPR Update are predicted to be in nonattainment or have issues with maintenance in 2023. Additionally, Kentucky cites information related to emissions trends – such as reductions in ozone precursor emissions and controls on Kentucky sources – as further evidence that, after implementation of all on-the-books measures including those identified in the CSAPR Update, emissions from the Commonwealth will no longer contribute significantly to nonattainment or interfere with maintenance of the 2008 8-hour ozone NAAQS in any other state.

⁹ As discussed above, EPA previously disapproved the portion of the Kentucky's July 17, 2012, SIP submission as it related to prongs 1 and 2. *See* 78 FR 14681 (March 7, 2013).

Kentucky requests that EPA approve the draft SIP submission and find that Kentucky is not required to make any further reductions, beyond those required by the CSAPR Update, to address its statutory obligation under CAA section 110(a)(2)(D)(i)(I) for the 2008 ozone NAAQS.¹⁰

III. EPA's Analysis of Kentucky's Draft Submission

In Kentucky's draft submission, the Commonwealth relies on modeling performed by EPA, which was summarized in the October 2017 Transport Memo, in support of its conclusion that the emissions reductions required by the CSAPR Update are adequate to prohibit emissions within Kentucky from significantly contributing to nonattainment, or interfering with the maintenance, of downwind states with respect to the 2008 ozone NAAQS. Accordingly, before undertaking the specific analysis of Kentucky's SIP submittal, it is helpful to understand how EPA developed the October 2017 Transport Memorandum. EPA applied the same four-step framework used in previous federal regulatory actions addressing interstate transport of ozone pollution, including most recently the CSAPR Update. While some aspects of these previous regulatory actions have been challenged in court—and some aspects of these challenges have been upheld—each of these rulemakings essentially followed the same four-step interstate transport framework to quantify and implement emission reductions necessary to address the interstate transport requirements of the good neighbor provision. These steps are described in the following four paragraphs.

(1) Identifying downwind air quality problems relative to the 2008 ozone NAAQS. EPA has historically identified downwind areas with air quality problems considering monitored

¹⁰ EPA is parallel processing Kentucky's draft SIP submittal. As discussed in more detail in Section IV, below, final approval of Kentucky's submission is contingent on Kentucky's submission of a final SIP submittal that does not differ significantly from the draft.

ozone data where appropriate and air quality modeling projections to a future compliance year. In the CSAPR Update, the Agency identified not only those areas expected to be in nonattainment with the ozone NAAQS, but also those areas that may struggle to maintain the NAAQS, despite clean monitored data or projected attainment.

(2) Determining which upwind states are “linked” to these identified downwind air quality problems and thereby warrant further analysis to determine whether their emissions violate the good neighbor provision. In CSAPR and the CSAPR Update, EPA identified such upwind states as those modeled to contribute at or above a threshold equivalent to one percent of the applicable NAAQS. Upwind states linked to one of these downwind nonattainment or maintenance areas were then evaluated to determine what level of emissions reductions, if any, should be required of each state.

(3) For states linked to downwind air quality problems, identifying upwind emissions on a statewide basis that significantly contribute to nonattainment or interfere with maintenance of a standard. In all of EPA’s prior rulemakings addressing interstate ozone pollution transport, the Agency apportioned emission reduction responsibility among multiple upwind states linked to downwind air quality problems by considering feasible NO_x control strategies and using cost-based and air quality-based criteria to quantify the amount of a linked upwind state’s emissions that significantly contribute to nonattainment or interfere with maintenance in another state.

(4) For states that are found to have emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind, implementing the necessary emission reductions within the state. EPA has done this by requiring affected sources in upwind states to participate in allowance trading programs (e.g., the CSAPR NO_x Ozone Season Group 2 Trading Program) to achieve the necessary emission reductions.

EPA's proposed action on Kentucky's draft submission is based on a finding that 2023 is a reasonable analytic year for evaluating ozone transport problems with respect to the 2008 ozone NAAQS and that interstate ozone transport air quality modeling projections for 2023 indicate that Kentucky is not expected to significantly contribute to nonattainment or interfere with maintenance of the 2008 ozone NAAQS in downwind states. As explained in more detail in the following paragraphs, EPA's selection of 2023 as a reasonable analytic year is supported by an assessment of attainment dates for the 2008 ozone NAAQS and feasibility for control strategies to reduce NO_x in CSAPR Update states, including Kentucky. EPA's assessment of NO_x control strategy feasibility prioritizes NO_x control strategies in CSAPR Update states that would be additional to those strategies that were already quantified into CSAPR Update emissions budgets. EPA proposes that 2023 is an appropriate future analytic year because it is the first ozone season for which significant new cost-effective post-combustion controls to reduce NO_x could be feasibly installed across the CSAPR Update region, and thus represents the timeframe that is as expeditious as practicable for upwind states to implement additional emission reductions. EPA's analysis of steps 1 and 2 for the 2023 analytic year indicates that there are no expected eastern nonattainment or maintenance receptors for the 2008 ozone NAAQS in this future year. Together, these findings support EPA's proposed approval of Kentucky's SIP submittal, which is based on the determination that Kentucky is not expected to significantly contribute to nonattainment or interfere with maintenance of the 2008 ozone NAAQS in downwind states in 2023.

A. *Additional information regarding selection of an analytic year*

One of the first steps in conducting air quality modeling analysis to evaluate steps 1 and 2 of the four-step interstate transport framework is selecting a future analytic year. In determining

the appropriate future analytic year for purposes of assessing remaining interstate transport obligations for the 2008 ozone NAAQS, including Kentucky's, EPA considered two primary factors: attainment dates and NOx control feasibility.

First, EPA considered the downwind attainment dates for the 2008 ozone NAAQS. In *North Carolina v. EPA*, the D.C. Circuit held that emissions reductions required by the good neighbor provision should be evaluated considering the relevant attainment dates of downwind nonattainment areas impacted by interstate transport.¹¹ The next attainment dates for the 2008 ozone NAAQS will be July 20, 2021, for nonattainment areas classified as serious and July 20, 2027, for nonattainment areas classified as severe.¹² Because the various attainment deadlines are in July, which is in the middle of the ozone monitoring season for all states, data from the calendar year prior to the attainment date (e.g., data from 2020 for the 2021 attainment date and from 2026 for the 2027 attainment date) are the last data that can be used to demonstrate attainment with the NAAQS. In all cases, the statute provides that areas should attain as expeditiously as practicable.¹³

Second, EPA considered the timeframes that may be required for implementing further emissions reductions as expeditiously as practicable. In considering potential emissions reductions, EPA notes that emissions levels are already expected to decline in the future through implementation of existing local, state and federal emissions reduction programs. This is an important consideration because the U.S. Supreme Court and the D.C. Circuit Court have both held that EPA may not require emissions reductions greater than necessary to achieve attainment

¹¹ 531 F.3d 896, 911–12 (D.C. Cir. 2008) (holding that EPA must coordinate interstate transport compliance deadlines with downwind attainment deadlines).

¹² While there are no areas (outside of California) that are classified as either serious or severe, these classifications (and the associated attainment dates) are required under the statute in the event that the many downwind moderate nonattainment areas fail to attain by their attainment date of July 20, 2018.

¹³ See CAA section 181(a)(1).

and maintenance of the NAAQS in downwind areas.¹⁴ Therefore, if new controls cannot be implemented feasibly for several years and air quality will likely be cleaner in the future, EPA should evaluate air quality in a future year to ensure that any potential emissions reductions would not over-control relative to the identified ozone problem. Accordingly, it is reasonable to evaluate downwind air quality, and identify any remaining receptors, in the year in which EPA expects additional emissions reductions, if any, to be implemented.

For its analysis of NO_x control feasibility, EPA believes that the feasibility of control strategies should reflect the time needed to plan for, install, and test new EGU and non-EGU NO_x reduction strategies across multiple states. This conclusion is based on previous interstate ozone transport analyses showing that multiple upwind states are typically linked to identified eastern downwind ozone problems.¹⁵ In particular, EPA's assessment in the CSAPR Update indicated that, with respect to the Harford and Richmond receptors to which Kentucky was linked, eight other states and the District of Columbia would continue to be linked to the Harford receptor and seven other states would continue to be linked to the Richmond receptor after implementation of the CSAPR Update in 2017.¹⁶ Thus, to evaluate potential upwind obligations for one of several states linked to a common downwind air quality problem, EPA believes the most appropriate approach is to evaluate potential NO_x control strategies on a regional, rather than state-specific, basis.

Further, EPA believes that the feasibility of new emissions controls should be considered on multiple upwind source categories in order to ensure that the Agency properly evaluates NO_x reduction potential and cost-effectiveness (at step 3 of the framework) from all reasonable

¹⁴ *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584, 1600–01 (2014); *EME Homer City Generation, L.P. v. EPA*, 795 F.3d 118, 127 (D.C. Cir. 2015).

¹⁵ See 81 FR 74504 (October 26, 2016).

¹⁶ See EPA's Air Quality Assessment Tool from the CSAPR Update in the docket for this rulemaking.

control measures (including beyond the EGU sector). Major NO_x emissions come from multiple anthropogenic source categories, such as electric utilities and industrial facilities. As commenters noted during the development of the CSAPR Update, EGUs in the eastern U.S. have been the subject of regulation to address interstate ozone pollution transport and have made significant financial investments to achieve emission reductions. While EPA evaluates additional control feasibility for EGUs in the discussion that follows, non-EGU source categories may also be well-positioned to cost-effectively reduce NO_x relative to EGUs, including non-EGUs that currently do not report emissions to EPA under 40 CFR part 75 and for which EPA's information concerning emissions levels, existing control efficiencies, and further emissions reduction potential is therefore more uncertain.¹⁷

In establishing the CSAPR Update EGU NO_x ozone season emission budgets, EPA quantified the emission reductions achievable from all NO_x control strategies that were feasible within one year and cost-effective at a marginal cost of \$1,400 per ton of NO_x removed.¹⁸ These EGU NO_x control strategies were: fully operating existing Selective Catalytic Reduction (SCR), including both optimizing NO_x removal by existing, operational SCRs and turning on and optimizing existing idled SCRs; installing state-of-the-art NO_x combustion controls; and shifting generation to existing units with lower-NO_x emission rates within the same state. For the purposes of this proposed action on Kentucky's draft submission, EPA considers these NO_x control strategies to have been appropriately evaluated in the CSAPR Update rulemaking. Further, the Agency believes that the resulting CSAPR Update emission budgets are being appropriately implemented under the CSAPR NO_x Ozone Season Group 2 allowance trading

¹⁷ See Assessment of Non-EGU NO_x Emission Controls, Cost of Controls, and Time for Compliance Final technical support document (TSD) from the CSAPR Update in the docket for this rulemaking.

¹⁸ The CSAPR Update was signed on September 7, 2016—approximately 8 months before the beginning of the 2017 ozone season on May 1.

program. Therefore, EPA has focused its further assessment on feasibility of controls that were deemed to be infeasible to install for the 2017 ozone season in the CSAPR Update for purposes of identifying an appropriate future analytic year rather than reassessing controls previously analyzed.

EPA identified, but did not account for, the following two EGU NO_x control strategies in establishing the CSAPR Update emissions budgets because implementation by 2017 was not considered feasible: installing new SCRs and selective non-catalytic reduction (SNCR) controls. In the CSAPR Update, EPA found that EGU SCR post-combustion controls can achieve up to 90 percent reduction in EGU NO_x emissions. In 2017, these controls were in widespread use by EGUs in the east. In the 22 state CSAPR Update region, approximately 59 percent of coal-fired EGU heat input and 64 percent of natural gas-fired EGU generation was equipped with SCR.¹⁹ Installing new SCR controls for EGUs not already equipped with such controls generally involves conducting an engineering review of the facility and awarding a procurement contract; obtaining a construction permit; installing the control technology; and obtaining an operating permit.²⁰ The total time associated with navigating these steps is estimated to be up to 39 months for an individual power plant installing SCR on more than one boiler.²¹ However, for the purposes of evaluating the installation timing for new SCR controls at the fleet-level, rather than the unit-level, within the CSAPR Update region, EPA believes more time would be needed. As explained more fully below, EPA determined that a minimum of 48 months is a reasonable time to allow for the coordination of outages, shepherding of labor and material supply, and

¹⁹ Heat input is a proxy for the distribution of electricity generation across the evaluated EGUs.

²⁰ Final Report: Engineering and Economic Factors Affecting the Installation of Control Technologies for Multipollutant Strategies (“Engineering and Economic Factors Report”), EPA-600/R-02/073, October 2002 (available at <https://nepis.epa.gov/Adobe/PDF/P1001G0O.pdf>).

²¹ Engineering and Economic Factors Report, Table 3-1.

identification of retrofit projects. This time frame would facilitate multiple power plants with multiple boilers to conduct all stages of post-combustion and combustion control project planning, installation and operation.

Scheduled curtailment, or planned outage, for pollution control installation would be necessary to complete either SCR or SNCR projects. Given that peak demand and rule compliance would both fall in the ozone-season, sources would likely try to schedule installation projects for the shoulder season (*i.e.*, the spring and/or fall when electricity demand is lower than in the peak summer season) when reserve margins are higher and compliance requirements are not yet in effect. If multiple units were under the same timeline to complete the retrofit projects as soon as feasible from an engineering perspective, this could lead to bottlenecks of scheduled outages as each unit is trying to start and finish in roughly the same compressed time. Thus, any compliance timeframe that would assume installation of new SCR or SNCR controls should allow multiple shoulder seasons to accommodate scheduling of curtailment for control installation purposes and better accommodate the regional nature of the program.

In addition to the coordination of scheduled curtailment, an appropriate compliance timeframe should accommodate the additional coordination of labor and material supply necessary for any fleet-wide mitigation efforts. The total construction labor for an SCR system associated with a 500 megawatt (MW) EGU is in the range of 300,000 to 500,000 man-hours, with boilermakers²² accounting for approximately half of this time.²³ SNCR, while generally having shorter project time frames of 10 to 13 months from bid solicitation to start-up, share similar labor and material resources and therefore are linked to the timing of SCR installation planning. In recent industry surveys, one of the largest shortages of union craft workers was for

²² A boilermaker is a trained and skilled craftsman who produces steel fabrications (in this context, boilers).

²³ See Engineering and Economic Factors Report, Table 3-1.

boilermakers. This shortage of skilled boilermakers is expected to rise due to an anticipated nine percent increase in boilermaker labor demand growth by 2026, coupled with expected retirements and comparatively low numbers of apprentices joining the workforce.²⁴ The shortage of and demand for skilled labor, including other craft workers critical to pollution control installation, is pronounced in the manufacturing industry. The Association of Union Constructors (TAUC) conducted a survey of identified labor shortages where boilermakers were second to most frequently reported skilled labor market with a labor shortage.²⁵ Moreover, the natural disasters of Hurricane Harvey and wildfires in 2017 are expected to further tighten the labor supply market in manufacturing in the near term.²⁶ EPA considered these tight labor market conditions (which were compounded by Hurricane Irma) for the manufacturing roles critical, and combined with fleet-level mitigation initiatives, would likely lead to some sequencing and staging of labor pool usage, rather than simultaneous construction across all efforts. Allowing a timeframe that exceeds the demonstrated single-unit installation is therefore appropriate for fleet-wide programs.

In addition to labor supply, NOx post-combustion control projects also require materials and equipment such as steel and cranes. Sheet metal workers used in steel production are also reported as having well above an average supply-side shortage of labor. This – coupled with growth in steel demand estimated at three percent in 2018 and the simultaneous growth in global

²⁴ Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Boilermakers, on the Internet at <https://www.bls.gov/ooh/construction-and-extraction/boilermakers.htm> (last modified on January 30, 2018).

²⁵ Union Craft Labor Supply Survey, The Association of Union Constructors, Exhibit 4-2 at page 29, available at https://www.tauc.org/files/2017_TAUC_UNION_CRAFT_LABOR_SUPPLY_REVISED_BC_FINAL.pdf (2017).

²⁶ Skilled Wage Growth Less Robust, Worker Shortage Still and Issue. Industry Week (October 23, 2017), available at <http://www.industryweek.com/talent/skilled-wage-growth-less-robust-worker-shortage-still-issue>.

economies – puts upward pressure on demand for steel.²⁷ Similarly, cranes are critical for installation of SCRs, which often need to be lifted hundreds of feet in the air. Cranes are also facing higher demand during periods of economic growth with companies reporting a shortage in both equipment and manpower.^{28,29} This tightening labor, materials, and equipment atmosphere combined with the regional aspect of a pollution transportation program puts upward pressure on installation timetables relative to what has been historically demonstrated at the unit-level.

The time lag identified between planning and in-service date of SCR and SNCR operations also illustrates that conditions sometimes lead to installation times of 4 years or longer. For instance, SCR projects for units at Ottumwa, Columbia, and Oakley Generating Station were all being planned by 2014. However, these projects had estimated in-service dates ranging between 2018 and 2021.³⁰ Completed projects, when large in scale, also illustrate how timelines can extend beyond the bare minimum necessary for a single unit when the project is part of a larger multi-unit air quality initiative. For instance, Big Bend in Florida recently completed a multi-faceted project that involved adding SCRs to all four units, converting furnaces, making overfire air changes, and making windbox modifications. The completion time from the initial planning stages was a decade.³¹

While individual unit-level SCR and SNCR projects can average 39 and 10 months respectively going from bid to start up, a comprehensive and regional emissions reduction effort requires more time to accommodate the labor, materials, and outage coordination. And since

²⁷ Worldsteel Short Range Outlook (October 16, 2017), available at <https://www.worldsteel.org/media-centre/press-releases/2017/worldsteel-Short-Range-Outlook-2017-2018.html>.

²⁸ *Seattle Has Most Cranes in the Country for 2nd Year in a Row – and Lead is Growing*, Seattle Times (July 11, 2017), available at <https://www.seattletimes.com/business/real-estate/seattle-has-most-cranes-in-the-country-for-2nd-year-in-a-row-and-lead-is-growing/>.

²⁹ See Rider Levett Bucknall Crane Index - January 2018 in the docket for this rulemaking.

³⁰ 2014 EIA Form 860, Schedule 6, Environmental Control Equipment.

³¹ *Big Bend's Multi-Unit SCR Retrofit*. Power Magazine. March 1, 2010. Available at <http://www.powermag.com/big-bends-multi-unit-scr-retrofit/>.

these post-combustion control strategies share similar input resources and are part of regional reduction programs rather than unit-specific technology mandates, the timeframes for one are inherently linked to another. This means that SNCR projects cannot simply be put on an early schedule because of the reduced construction timing without impacting the available resources to SCRs and the potential start dates of those projects. Given the market and regulatory circumstances in which EPA evaluated this effort, it determined that 4 years would be a reasonable time to coordinate the planning and completion of any mitigation efforts necessary in this instance.

In the CSAPR Update, EPA also evaluated the feasibility of NO_x controls on non-EGUs in the eastern United States, finding that there was greater uncertainty in the assessment of non-EGU point-source NO_x mitigation potential as compared to EGUs.³² EPA explained in the CSAPR Update that more time was required for states and EPA to improve non-EGU point source data, including data on existing control efficiencies, additional applicable pollution control technologies, and installation times for those control technologies. Further, using the best information available to EPA, which was submitted for public comment with the proposed CSAPR Update, EPA found that there were more non-EGU point sources than EGU sources and that these sources on average emit less NO_x than EGUs. The implication was that there were more individual sources to control and there were relatively fewer emissions reductions available from each source, reducing the cost-effectiveness of controls. Further, another factor influencing uncertainty was that EPA lacks sufficient information on the capacity and experience of suppliers and major engineering firms' supply chains to determine if they would be able to install the required pollution controls for non-EGU sources in less than 48 months. Considering these

³² See Assessment of Non-EGU NO_x Emission Controls, Cost of Controls, and Time for Compliance Final TSD from the CSAPR Update in the docket for this rulemaking.

factors, EPA found substantial uncertainty regarding whether significant aggregate NO_x mitigation would be achievable from non-EGU point sources to address the 2008 ozone NAAQS any earlier than the timelines noted in EPA's analysis of new EGU post-combustion control feasibility.

Finally, in the CSAPR Update, EPA also identified one EGU NO_x control strategy that was considered feasible to implement within one year but was not cost-effective at a marginal cost of \$1,400 per ton of NO_x removed: specifically, turning on existing idled SNCRs. In the CSAPR Update, EPA identified a marginal cost of \$3,400 per ton as the level of uniform control stringency that represents turning on and fully operating idled SNCRs.³³ However, the CSAPR Update finalized emission budgets using \$1,400 per ton control stringency, finding that this level of stringency represented the control level at which incremental EGU NO_x reductions and corresponding downwind ozone air quality improvements were maximized with respect to marginal cost. In finding that use of the \$1,400 control cost level was appropriate, EPA established that the more stringent emission budget level reflecting \$3,400 per ton (representing turning on idled SNCR) yielded fewer additional emission reductions and fewer air quality improvements relative to the increase in control costs. In other words, based on information available at that time, establishing emission budgets at \$3,400 per ton was not determined to be cost-effective for addressing good neighbor provision obligations for the 2008 ozone NAAQS. 81 FR 74550 (Oct. 26, 2016). EPA believes that its assessment of turning on and fully operating SNCRs was appropriately evaluated in the CSAPR Update with respect to addressing interstate ozone pollution transport for the 2008 ozone NAAQS. Accordingly, in this proposal EPA is not

³³ See EGU NO_x Mitigation Strategies Final Rule TSD, docket ID EPA-HQ-OAR-2015-0500-0554, available at www.regulations.gov.

prioritizing the assessment of this control strategy in terms of identifying an appropriate future analytic year.

For these reasons, EPA believes it is appropriate to assume that planning for, installing, and commencing operation of new controls for both EGUs and non-EGUs would take up to 48 months following promulgation of a final rule requiring appropriate emission reductions. Specifically, EPA believes that it is reasonable to assume that the installation of new post-combustion controls for state- or regional-level fleets of EGUs or controls for non-EQU point sources may take up to 4 years following promulgation of a final rule.³⁴ For purposes of conducting updated modeling to determine in what year future emissions reductions might be implemented, EPA, therefore, considered the timeframe in which a future rulemaking that might require such emissions reductions would likely be finalized. While EPA is subject to several statutory and court-ordered deadlines to address the requirements of the good neighbor provision for the 2008 ozone NAAQS, EPA does not believe that it is feasible, at this point, to finalize action requiring emission reductions for any state prior to the start of the 2018 ozone season (i.e., May 1, 2018).³⁵ Accordingly, implementation of any of the control strategies considered herein is likely not feasible until during or after the 2022 ozone season. Considering the time to implement the controls with the time to promulgate a final rule, EPA believes that such reductions are unlikely to be implemented for a full ozone season until 2023.

While 2023 is later than the next attainment date for nonattainment areas classified as Serious (July 20, 2021), as explained earlier, EPA does not believe it is likely that emissions

³⁴ See 81 FR 74562 (October 26, 2016).

³⁵ Using the 2023 analytic year also allowed EPA to begin the updated analysis using the data sets originally developed for the January 2017 NODA (82 FR 1733, January 6, 2017), which we revised in response to stakeholder feedback. Accordingly, EPA initiated its analysis more quickly than if a different year had been chosen, which might have delayed subsequent rulemaking actions and therefore emissions reductions.

control requirements could be promulgated and implemented by the serious area attainment date. Likewise, EPA also believes that it would not be reasonable to assume that emissions reductions could be postponed to the attainment date for nonattainment areas classified as severe (July 20, 2027) because the statute instructs states to attain the NAAQS as expeditiously as practicable. Accordingly, EPA believes implementation of additional emission reductions would be as expeditiously as practicable in light of relevant attainment dates.

In conclusion, in selecting its future analytic year for the air quality modeling, EPA balanced considerations such as attainment dates in downwind states, including the obligation to attain as expeditiously as practicable, EPA's obligation to avoid unnecessary over-control of upwind state emissions, the timeframe in which any necessary emissions reductions could be feasibly implemented, and the timeframe required for rulemaking to impose any such emissions reductions that might be required. In light of these considerations, EPA believes that 2023 is a reasonable year to assess downwind air quality to evaluate any remaining requirements under the good neighbor provision for the 2008 ozone NAAQS.

B. EPA's Air Quality Modeling

EPA used the Comprehensive Air Quality Model with Extensions (CAMx v6.40)³⁶ for modeling the updated emissions in 2011 and 2023.³⁷ EPA used outputs from the 2011 and 2023 model simulations to project base period 2009-2013 average and maximum ozone design values

³⁶ CAMx v6.40 was the most recent public release version of CAMx at the time EPA updated its modeling in Fall 2017. Comprehensive Air Quality Model with Extension version 6.40 User's Guide," Ramboll Environ, December 2016, available at <http://www.camx.com/>. For the emissions information, see TSD: *Additional Updates to Emissions Inventories for the Version 6.3, 2011 Emissions Modeling Platform for the Year 2023*, October 2017. Available at <https://www.epa.gov/air-emissions-modeling/2011-version-63-platform>.

³⁷ For the updated modeling, EPA used the construct of the modeling platform (i.e., modeling domain and non-emissions inputs) that we used for the NODA modeling, except that the photolysis rates files were updated to be consistent with CAMx v6.40. The NODA Air Quality Modeling Technical Support Document describing the modeling platform is available at <https://www.epa.gov/airmarkets/notice-data-availability-preliminary-interstate-ozone-transport-modeling-data-2015-ozone>.

to 2023 at monitoring sites nationwide. EPA's modeling guidance³⁸ recommends that model predictions from the "3 x 3" array of grid cells surrounding the location of the monitoring site be used in the projection of future year design values. EPA used this approach for projecting design values for the updated 2023 modeling. In addition, in light of comments on the January 2017 NODA and other analyses, EPA also projected 2023 design values based on a modified version of this approach for those monitoring sites located in coastal areas. In brief, in the alternative approach, EPA eliminated from the design value calculations those modeling data in grid cells not containing a monitoring site that are dominated by water (i.e., more than 50 percent of the land use in the grid cell is water).^{39,40}

When identifying areas with potential downwind air quality problems, EPA's updated modeling used the same "receptor" definitions as those developed during the CSAPR rulemaking process and used in the CSAPR Update.⁴¹ That is, EPA identified nonattainment receptors as those monitoring sites with current measured values exceeding the NAAQS that also have projected (*i.e.*, in 2023) average design values exceeding the NAAQS. EPA identified maintenance receptors as those monitoring sites with current measured values below the NAAQS and projected average and maximum design values exceeding the NAAQS. EPA also identified as maintenance receptors those monitoring sites with projected average design values below the NAAQS but with projected maximum design values exceeding the NAAQS. As with past

³⁸ Draft Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze (Dec. 13, 2014), available at

http://www.epa.gov/ttn/scram/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf.

³⁹ A model grid cell is identified as a "water" cell if more than 50 percent of the grid cell is water based on the 2006 National Land Cover Database. Grid cells that meet this criterion are treated as entirely over water in the Weather Research Forecast (WRF) modeling used to develop the 2011 meteorology for EPA's air quality modeling.

⁴⁰ The base period and 2023 average and maximum design values at individual monitoring sites for both the "3 x 3" approach and the alternative approach affecting coastal sites are available in a file at <https://www.epa.gov/airmarkets/october-2017-memo-and-information-interstate-transport-sips-2008-ozone-naaqs>. This file also contains 2014-2016 measured design values.

⁴¹ See 81 FR 74530 (October 26, 2016).

application of receptor definitions, EPA considered all nonattainment receptors to also be maintenance receptors because a monitoring site with a projected average design value above the standard necessarily also has a projected maximum design value above the standard.

EPA's 2023 updated modeling, using either the "3 x 3" approach or the alternative approach described above for projecting design values for monitoring sites in coastal areas, indicates that there are no monitoring sites outside of California that are projected to have nonattainment or maintenance problems with respect to the 2008 ozone NAAQS in 2023.⁴² Specifically for Kentucky, EPA's modeling for the CSAPR Update showed that emissions from Kentucky were linked to 2017 maintenance receptors in Harford Co., MD, Hamilton Co., OH, Philadelphia Co., PA, and Richmond Co., NY. As indicated above, EPA's updated 2023 modeling shows that these monitoring sites—along with all other sites outside of California—will have nonattainment and/or maintenance problems resolved with respect to the 2008 ozone NAAQS in 2023.

C. Conclusions

As discussed above, Kentucky's draft submission demonstrates that emission activities from the State will not contribute significantly to nonattainment or interfere with maintenance of the 2008 8-hour ozone NAAQS in any other state after implementation of all on-the-books measures, including the CSAPR Update. EPA's modeling indicates that there are no monitoring sites (outside of California) that are projected to have nonattainment or maintenance problems with respect to the 2008 ozone NAAQS in 2023, and EPA's analysis supports the use of 2023 as the proper analytic year. Kentucky has provided information that shows the use of this modeling is appropriate in this context, such as emissions trends data and information about on-the-books

⁴² This information is available at <https://www.epa.gov/airmarkets/october-2017-memo-and-information-interstate-transport-sips-2008-ozone-naaqs>.

controls that supports the likelihood of reduced emissions from Kentucky between 2017 and 2023. For example, Kentucky's submission notes that retirements of coal-fired units at the E.W. Brown Generating Station and the Elmer Smith Plant are planned to occur before 2023, which means that emissions of NO_x from Kentucky sources will be even lower than EPA's modeling projects. In addition, Kentucky's draft submission contains air quality modeling conducted by Alpine Geophysics, LLC, that similarly concludes that none of the nonattainment and maintenance receptors identified in the CSAPR Update are predicted to be in nonattainment or have issues with maintenance in 2023.

Because Kentucky is not linked to any downwind nonattainment or maintenance receptors in 2023, EPA is proposing to approve Kentucky's draft SIP submission and to determine that—after implementation of all on-the-books measures, including the CSAPR Update—emissions from the Commonwealth will no longer contribute significantly to nonattainment or interfere with maintenance of the 2008 8-hour ozone NAAQS in any other state.

IV. Parallel Processing

Parallel processing refers to a concurrent state and federal proposed rulemaking action. Generally, the state submits a copy of the proposed regulation or other revisions to EPA before conducting its public hearing. EPA reviews this proposed state action, and prepares a notice of proposed rulemaking. EPA's notice of proposed rulemaking is published in the Federal Register during the same timeframe that the state is holding its public hearing. The state and EPA then provide for concurrent public comment periods on both the state action and federal action, respectively. If the state's formal SIP revision is changed from the draft SIP revision, EPA will evaluate those changes and may publish another notice of proposed rulemaking. A final

rulemaking action by EPA will occur only after the SIP revision has been adopted by Kentucky and submitted formally to EPA for incorporation into the SIP.

The Commonwealth of Kentucky, through the Kentucky Division for Air Quality (DAQ), requested parallel processing of the February 28, 2018 draft SIP revision regarding the “good neighbor” provision of the CAA. This revision was noticed for public comment by the Commonwealth on March 1, 2018, and is not yet state-effective. Through this proposed rulemaking, EPA is proposing parallel approval of this draft SIP revision.

Once the February 28, 2018, draft revision is state-effective, Kentucky will need to provide EPA with a formal SIP revision that meets the requirements outlined in 40 CFR part 51 Appendix V “Criteria for Determining the Completeness of Plan Submissions.” After Kentucky submits the formal SIP revision (including a response to any public comments raised during the State’s public participation process), EPA will evaluate the revision. If the formal SIP revision is changed from the draft SIP revision, EPA will evaluate those changes for significance. If any such changes are found by EPA to be significant, then the Agency intends to re-propose the action based upon the revised submission.

While EPA may not be able to have a concurrent public comment process with the Commonwealth, the DAQ-requested parallel processing allows EPA to begin to take action on the Commonwealth’s draft SIP submission in advance of the formal SIP submission. As stated above, the final rulemaking action by EPA will occur only after the SIP submission has been: (1) adopted by Kentucky; (2) submitted formally to EPA for incorporation into the SIP; and (3) evaluated for changes.

V. EPA’s Proposed Action

EPA is proposing to approve Kentucky's February 28, 2018, draft SIP submission and to find that Kentucky is not required to make any further reductions, beyond those required by the CSAPR Update, to address its statutory obligation under CAA section 110(a)(2)(D)(i)(I) for the 2008 8-hour ozone NAAQS. If EPA finalizes approval of this draft submission, Kentucky's obligations under 110(a)(2)(d)(i)(I) will be fully addressed through the combination of the CSAPR Update FIP and the demonstration showing that no further reductions are necessary. As a result, EPA is also proposing to amend the regulatory text at 40 CFR 52.940(b)(2) to reflect that the CSAPR Update represents a full remedy with respect to Kentucky's transport obligation for the 2008 ozone NAAQS. EPA requests comment on this proposed action.

EPA's proposed approval is contingent on Kentucky's submission of a final SIP revision that does not differ significantly from the February 28, 2018 draft. Should Kentucky not submit such a final SIP revision to EPA or should EPA not be able to approve a final revision, EPA will undertake further action to address any outstanding obligations that Kentucky may have under 110(a)(2)(D)(i)(I) for the 2008 ozone NAAQS. The Agency has made the preliminary determination that this proposed action is consistent with the CAA.

VI. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. *See* 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the CAA. This action merely proposes to approve state law as meeting Federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this proposed action:

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- Is not an Executive Order 13771 (82 FR 9339, February 2, 2017) regulatory action because SIP approvals are exempted under Executive Order 12866;
- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- Does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- Does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- Is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- Is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the CAA; and

- Does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

The SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), nor will it impose substantial direct costs on tribal governments or preempt tribal law.

List of Subjects in 40 CFR Part 52

Environmental protection, Administrative practice and procedure, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, , Reporting and recordkeeping requirements.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: April 9, 2018.

Onis “Trey” Glenn, III
Regional Administrator,
Region 4

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